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10/733,183

12/10/2003

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8791 7590 12/22/2006  
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EXAMINER

ANDUJAR, LEONARDO

ART UNIT

PAPER NUMBER

2826

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|----------------------------------------|-----------|---------------|
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3 MONTHS

12/22/2006

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/733,183

Applicant(s)

MALLIK ET AL.

Examiner

Leonardo Andújar

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10/10/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 10-19, 43-52 and 2734 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 20-26 and 35-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Acknowledgement***

1. After considered the remarks sent on 10/10/2006 the amendment filed on 06/15/2006 is fully responsive and has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-52.

### ***Election/Restrictions***

2. Applicant's election without traverse of species 2 in the reply filed on 01/09/2006 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-7, 8, 35-39 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Radu et al. (US 6,956,285).

5. Regarding claims 1, Radu (e.g. fig. 1) shows an microelectronic device package, comprising: an electrically conductive flat lid 206 having an attachment surface; a substrate 202 having an attachment surface; at least one electrically conductive first interconnect 218 extending between the lid attachment surface and the substrate

attachment surface; at least one microelectronic die 204 disposed between the lid attachment surface and the substrate attachment surface; and the substrate having at least one first conductive trace 222 extending between the electrically conductive first interconnect and the microelectronic die (col. 14/lls. 14-53).

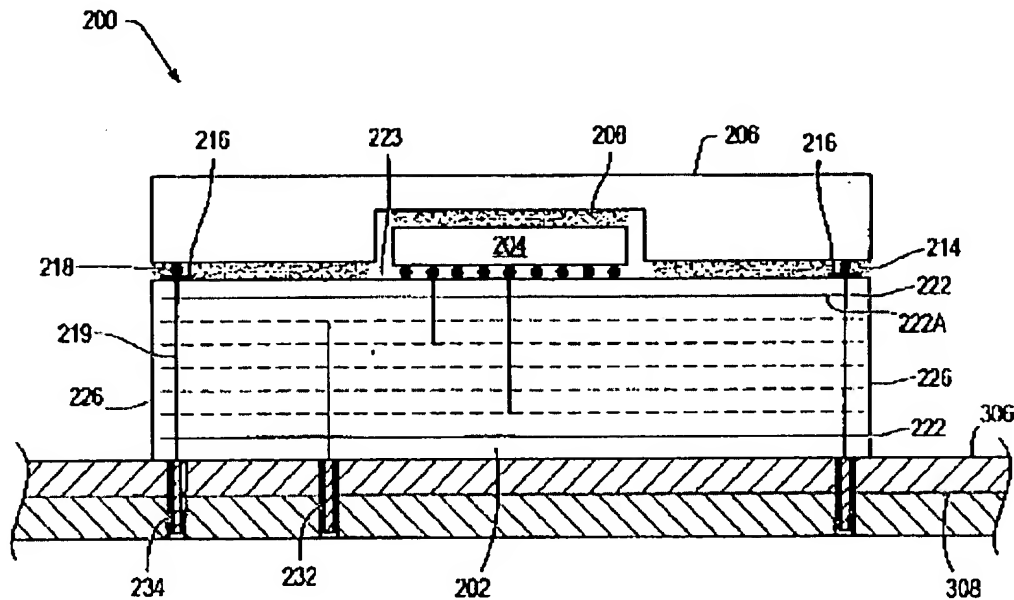


FIG. 2A

6. Regarding claim 2, Radu shows that the package includes first signal line in electrical communication with the electrical conductive lid (col. 3/lls. 1-5).

7. Regarding claim 3, Radu shows that the lid comprises a thermally conductive heat dissipation device 400 (e.g. fig. 5).

8. Regarding claim 4, Radu shows a thermal interface material 208 disposed between the heat dissipation device and the back surface of microelectronic die.

9. Regarding claim 5, Radu shows a socket (i.e. connecting holes of substrate 306/308 having a first surface (e.g. top surface), a second surface (e.g. bottom surface)

opposing to the first surface; an a recess extending into the socket first surface. Also, the substrate and the microelectronic die substantially residing in the socket recess; and a portion of the lid 355 extending proximate to the socket first surface (e.g. fig. 5).

10. Regarding claim 6, Radu shows a first signal line 219 extending from the socket second surface to the socket first surface, wherein the first signal trace is in electrical contact with the lid.

11. Regarding claim 8, Radu shows a second signal line 232 extending from the socket second surface to the socket first surface, wherein the second signal trace is in electrical contact with the substrate.

12. Regarding claim 35, Radu (e.g. fig. 2A) shows a method of delivering at least one signal to a microelectronic die, comprising: providing an electrically conductive flat lid 206 having an attachment surface; providing a substrate 202 having an attachment surface; disposing at least one electrically conductive first interconnect 218 extending between the lid attachment surface and the substrate attachment surface; disposing at least one microelectronic die 204 between the lid attachment surface and the substrate attachment surface; providing at least one first conductive trace 222 extending between the electrically conductive first interconnect and the microelectronic die; and delivering a signal to the electrically conductive lid (col. 14/lis. 14-53).

13. Regarding claim 36, Radu shows that the lid comprises a thermally conductive heat dissipation device 400 (e.g. fig. 5).

14. Regarding claim 37, Radu shows a thermal interface material 208 disposed between the heat dissipation device and the back surface of microelectronic die.

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15. Regarding claim 38, Radu shows a socket (i.e. connecting holes of substrate 306/308 having a first surface (e.g. top surface), a second surface (e.g. bottom surface) opposing to the first surface; an a recess extending into the socket first surface. Also, the substrate and the microelectronic die substantially residing in the socket recess; and a portion of the lid 355 extending proximate to the socket first surface (e.g. fig. 5).

16. Regarding claim 39, Radu shows a first signal line 219 extending from the socket second surface to the socket first surface, wherein the first signal trace is in electrical contact with the lid.

17. Regarding claim 41, Radu shows a second signal line 232 extending from the socket second surface to the socket first surface, wherein the second signal trace is in electrical contact with the substrate

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

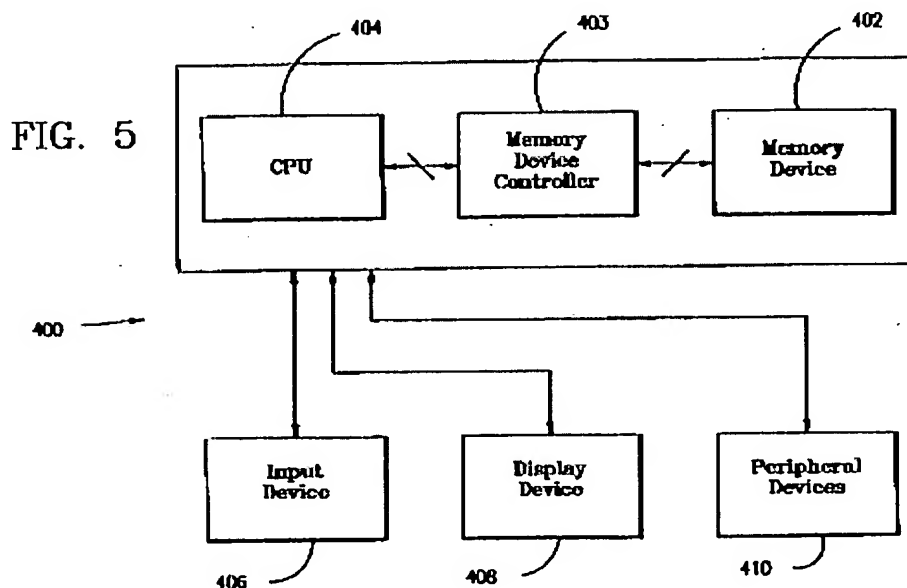
19. Claims 7, 9, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Radu et al. (US 6,956,285) in view of Fujino (JP- 2001319997).

20. Regarding claims 7, 9, 40 and 42, Radu shows most aspects of the instant invention except at least one external contact contacting the at least one first/second signal line proximate tot the second socket surface. Nevertheless, Fujino (e.g. fig. 1) shows a substrate 2 having external contact contacting at least one first/second signal

line 5. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include, in the invention disclosed by Radu, at least one external contact contacting the at least one first/second signal line proximate to the second socket surface as suggested by Fujino in order to provide an interconnection means that provide an excellent electrical performance while the connection inductance can be reduced.

21. Claims 20-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman (US 6,172,419) in view of Radu et al. (US 6,956,285).

22. Regarding claim 20, Kinsman shows most aspects of the instant invention including an electronic system 400, comprising: a microelectronic device package CPU 404 attached to and external substrate (e.g. fig. 4; 32), an input device 406 interfaced with the external substrate and a display device 406 interfaced with the external substrate.



However, Kinsman does not show that the microelectronic package includes: an electrically conductive flat lid having an attachment surface; a substrate having an attachment surface; at least one electrically conductive first interconnect extending between the lid attachment surface and the substrate attachment surface; at least one microelectronic die disposed between the lid attachment surface and the substrate attachment surface; and the substrate having at least one first conductive trace extending between the electrically conductive first interconnect and the microelectronic die. Nevertheless, Radu shows microelectronic device package (CPU) is attached to an external substrate 306 wherein the device package, comprising: an electrically conductive flat lid 206 having an attachment surface; a substrate 202 having an attachment surface; at least one electrically conductive first interconnect 218 extending between the lid attachment surface and the substrate attachment surface; at least one microelectronic die 204 disposed between the lid attachment surface and the substrate attachment surface; and the substrate having at least one first conductive trace 222 extending between the electrically conductive first interconnect and the microelectronic die (col. 1/lls. 26-28 & col. 14/lls. 14-53). According to Radu, this type of embodiment reduces or eliminates the electromagnetic interface that interferes with the individual performance of individual IC devices as well as the overall performance of the system (col. 1/lls. 12-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the microelectronic package (e.g. CPU) disclosed by Kinsman having an electrically conductive flat lid having an attachment surface; a substrate having an attachment surface; at least one electrically conductive first



interconnect extending between the lid attachment surface and the substrate attachment surface; at least one microelectronic die disposed between the lid attachment surface and the substrate attachment surface; and the substrate having at least one first conductive trace extending between the electrically conductive first interconnect and the microelectronic die as suggested by Radu to reduce/eliminate electromagnetic interface that interferes with the IC device individual performance as well as the overall performance of the system.

23. Regarding claim 21, Radu shows that the package includes first signal line in electrical communication with the electrical conductive lid (col. 3/lis. 1-5).

24. Regarding claim 22, Radu shows a socket (i.e. connecting holes of substrate 306/308 having a first surface (e.g. top surface), a second surface (e.g. bottom surface) opposing to the first surface; an a recess extending into the socket first surface. Also, the substrate and the microelectronic die substantially residing in the socket recess; and a portion of the lid 355 extending proximate to the socket first surface (e.g. fig. 5).

25. Regarding claim 23, Radu shows a first signal line 219 extending from the socket second surface to the socket first surface, wherein the first signal trace is in electrical contact with the lid.

26. Regarding claim 25, Radu shows a second signal line 232 extending from the socket second surface to the socket first surface, wherein the second signal trace is in electrical contact with the substrate.

27. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman (US 6,172,419) in view of Radu et al. (US 6,956,285) further in view of Fujino (JP- 2001319997).

28. Regarding claims 24 and 26, Kinsman in view of Radu shows most aspects of the instant invention except at least one external contact contacting the at least one first/second signal line proximate to the second socket surface. Nevertheless, Fujino (e.g. fig. 1) shows a substrate 2 having external contact contacting at least one first/second signal line 5. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form in the system disclosed by Kinsman in view of Radu at least one external contact contacting the at least one first/second signal line proximate to the second socket surface as suggested by Fujino in order to provide an interconnection means that provide an excellent electrical performance while the connection inductance can be reduced.

### ***Response to Arguments***

29. Applicant's arguments filed 06/15/2006 have been fully considered but they are not persuasive.

30. Applicant argues that the new added limitation is not taught in the prior art. However, the lid 206 disclosed by Radu can be considered a flat plate since it is a plate having at least a major flat surface. Note that the upper surface of the plate is completely flat. It is respectfully noted that the claim limitation is broad enough to include flat plates that may have a cavity such as the lid 206 or a lid having a hole for example. Although the claims are interpreted in light of the specification, limitations from

the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

31. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

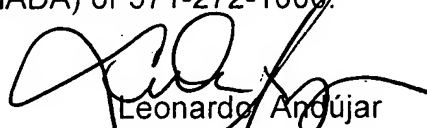
32. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonardo Andújar whose telephone number is 571-272-1912. The examiner can normally be reached on Mon through Thu from 9:00 AM to 7:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Leonardo Andújar  
Primary Examiner  
Art Unit 2826

12/18/2006